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ELSEVIER SCIENCE FULL-TEXT ARTICLE

Expression of antioxidant enzymes in bronchial metaplastic and dysplastic epithelium.

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We investigated immunohistochemical expression of manganese superoxide dismutase (MnSOD) and three hydrogen peroxide (H(2)O(2)) scavenging pathways, i.e. catalase (CAT), gamma-glutamyl cysteine synthetase (gammaGCS) and thioredoxin (Trx) system in normal bronchial epithelium, bronchial metaplasia and dysplasia and correlated their expression with NF-kappaB activation (p50) and proliferation (Ki67). Normal bronchial epithelium was positive for MnSOD, heavy and light subunits of gammaGCS, CAT and Trx and TrxR. Metaplastic epithelium showed strongest expression of gammaGCSh and Trx, whereas dysplastic epithelium expressed most prominently MnSOD and CAT. There was a significant correlation between expression of gammaGCSh and gammaGCSl (P=0.034) and Trx and TrxR (P=0.037). Trx expression also correlated with gammaGCSh (P<0.001) and gammaGCSl (P=0.012) and TrxR with gammaGCSh (P<0.001) but not with gammaGCSl immunoreactivity (P=0.744). Expression of p50 was highest in metaplastic epithelium while Ki67 was highest in dysplastic lesions. Expression of Trx and gammaGCSh correlated inversely with age of the patients (R=-0.6038, P<0.001 for Trx and R=-0.6162, P<0.001 for gammaGCSh). Changes in the expression of these enzymes in bronchial lesions might be due to alterations of antioxidative mechanisms due to irritation via exogenous toxins and activation of reactive oxygen species (ROS) known to be associated with induction of metaplasia and dysplasia in the bronchial tree.

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